

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior versions and listings of claims in the present application.

Listing of Claims:

Claims 1-22. (Cancelled)

Claim 23. (Currently Amended) An apparatus for carrying out a heterogeneously catalyzed reaction, comprising:

at least one pair of alternating first and second porous catalyst layers;

the first catalyst layer comprising

an educt opening passing therethrough, and

an educt channel formed in a planar surface of the first catalyst layer and fluidly connected to the educt opening; and

the second catalyst layer comprising

a product opening passing therethrough, and

a product channel formed in a planar surface of the second catalyst layer and fluidly connected to the product opening; wherein,

adjacent planar surfaces of the first and second catalyst layers are in fluid communication with each other; and

the first and second catalyst layers further ~~comprising~~ comprise a substantially gas-tight edge seal in a peripheral region thereof.

Claim 24. (Previously Presented) The apparatus of Claim 23, wherein the first catalyst layer comprises first and second educt openings and a plurality of educt channels fluidly connected to at least one of the first and second educt openings, and the second catalyst layer comprises first and second product openings therein and a plurality of product channels fluidly connected to at least one of the first and second product openings.

Claim 25. (Currently Amended) An apparatus for carrying out a heterogeneously catalyzed reaction, comprising:

a stack comprising a plurality of porous catalyst layers, each of the catalyst layers comprising

an educt opening passing therethrough,

an educt channel formed in a planar surface of the catalyst layer and fluidly connected to the educt opening,

a product opening therethrough, and

a substantially gas-tight edge seal in a peripheral region of the catalyst layer; [.]

wherein adjacent planar surfaces of the catalyst layers are in fluid communication with each other.

Claim 26. (Previously Presented) The apparatus of Claim 25, wherein the catalyst layers further comprise a product channel formed in the planar surface thereof, the fluid channel fluidly connected to the product opening.

Claim 27. (Previously Presented) The apparatus of Claim 25, wherein the catalyst layers further comprise first and second educt openings, a first plurality of educt channels fluidly connected to the first educt opening, and a second plurality of educt channels fluidly connected to the second educt opening, wherein the first and second educt channels are interdigitated.

Claim 28. (Previously Presented) The apparatus of Claim 25, further comprising first and second end plates, the first end plate sealingly connected to a first catalyst layer of the stack and the second end plate sealingly connected to a last catalyst layer.

Claim 29. (Previously Presented) The apparatus of Claim 28, further comprising a gas-tight sheet material covering the surface of the stack between the first and second end plates.

Claim 30. (Previously Presented) The apparatus of Claim 29, wherein the sheet material comprises at least one vent hole therein.

Claim 31. (Previously Presented) The apparatus of Claim 25, wherein the catalyst layer further comprises a mixture comprising a metallic support structure and catalyst particles.

Claim 32. (Previously Presented) The apparatus of Claim 31,
wherein the metallic support structure comprises dendritic copper.

Claims 33.-47. (Cancelled)